



***Review of Emergency  
Preparedness of Areas Adjacent  
to Indian Point and Millstone***

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## EXECUTIVE SUMMARY

On August 1, 2002, Governor George E. Pataki announced a comprehensive and independent review of emergency preparedness to be performed by James Lee Witt Associates (JLWA) for the area around the Indian Point Energy Center ("Indian Point"), and for that portion of New York in proximity to the Millstone nuclear plant ("Millstone") in Connecticut. James Lee Witt Associates subcontracted with Innovative Emergency Management ("IEM") for portions of the review. The review encompassed many related activities that were designed, when taken together, to determine whether the existing plans and capabilities of the jurisdictions involved are sufficient to ensure the safety of the people of New York in the event of an incident at one of these plants, and how those existing plans and capabilities might be improved. In addition to an outreach effort into the surrounding communities, the review included recent exercise results and public information efforts, current radiological emergency response plans, and the data underlying the response plans, such as population data, the methodology of evacuation time estimates, alert and notification system specifications, Off-site accident impact analysis methodologies, and communication capabilities.

It should be noted that we were not asked to look at the safety of the plants themselves, the availability of alternate energy sources, the economic and environmental costs and benefits of the plants, or other factors relevant to an overall picture of the plants within their respective communities. Consequently, nowhere have we taken a position on the future status of the plants.

During our review we were frequently asked whether we were under constraints. We were guided by our experience and were unconstrained in our recommendations.

### Major Findings

#### **Plans and Exercises**

- 1 The plans are built on compliance with regulations, rather than a strategy that leads to structures and systems to protect from radiation exposure.
- 2 The plans appear based on the premise that people will comply with official government directions rather than acting in accordance with what they perceive to be their best interests.
- 3 The plans do not consider the possible additional ramifications of a terrorist caused event.
- 4 The plans do not consider the reality and impacts of spontaneous evacuation.
- 5 Response exercises designed to test the plans are of limited use in identifying inadequacies and improving subsequent responses.

These planning problems are more serious because of the large population concentrations near the Indian Point plant, and when the effectiveness of the plan requires a degree of public and responder confidence that is largely absent. Thus the consequences of the five general findings above are more serious for the communities around Indian Point than for New York jurisdictions closest to Millstone.

## **Regulations**

The Nuclear Regulatory Commission ("NRC") has stated as recently as November 18, 2002, that a preliminary assessment of the capabilities of, and compliance by, the State and its jurisdictions by the Federal Emergency Management Agency ("FEMA"), based on the September 24, 2002 exercise, indicates the Off-site emergency plans are adequate to protect public health and safety. While under the current regulations that may be technically true, we are concerned that when plans and exercises, which omit such things as a realistic consideration of spontaneous evacuation and the unique consequences of a terrorist attack, still meet NRC and FEMA regulations, then those regulations need to be revised and updated on a national basis. We believe any plant adjacent to high population areas should have different requirements than plants otherwise situated, because protective actions are more difficult and the consequences of failure or delay are higher. The standard, to minimize the radiological dose to the public, would remain the same; its accomplishment necessitates higher requirements in some communities than others.

Some may look at our findings, conclusions, and recommendations and read them, incorrectly, as an indictment of FEMA or the State and its jurisdictions, and their staff and leadership. FEMA has recognized the need to change in the direction of a more performance-based approach in its exercise program. Although the change does not go far enough, it began with a multi-year strategic review of the Radiological Emergency Preparedness Program, and resulted in a new exercise methodology developed prior to 9/11 and published in the Federal Register on September 12, 2001. This beginning of a change in exercise theory to focus on performance outcomes was not found in the planning and exercising practices of the State of New York and its jurisdictions however. We hope our recommendations will accelerate both regulatory and cultural changes.

Also, while we do have many recommendations for further change that impact on the systems and practices of FEMA and others, we recognize that these systems and practices were developed in a different environment. Simply stated, the world has recently changed. What was once considered sufficient may now be in need of further revision. We hope that those at all levels of government with emergency management responsibilities will consider our suggestions in a manner that is consistent with their high standards and professional experience.

## **Major Conclusions**

### **Indian Point Safety**

In our report we discuss significant planning inadequacies, expected parental behavior that would compromise school evacuation, difficulties in communications, outdated vulnerability assessment, the use of outdated technologies, lack of first responder confidence in the plan(s), problems caused by spontaneous evacuation, the nature of the road system, the thin public education effort, and how

these issues may impact an effective response in a high population area. None of these problems, when considered in isolation, precludes effective response. When considered together, however, it is our conclusion that the current radiological response system and capabilities are not adequate to overcome their combined weight and protect the people from an unacceptable dose of radiation in the event of a release from Indian Point. We believe this is especially true if the release is faster or larger than the typical exercise scenario. Should our recommendations be successfully implemented it is possible that an improved exercise program will demonstrate that a different conclusion is warranted.

### **Millstone Safety**

Although most of the problems mentioned above also apply to those New York jurisdictions near Millstone, their consequences are significantly less for reasons detailed in the report. The response system and capabilities of those jurisdictions, though inferior to those near Indian Point, should be able to protect New York citizens from an unacceptable dose of radiation in all but the most extreme event. Implementation of our recommendations should dramatically increase that margin of safety.

## **Major Recommendations**

### **Plans**

Plants adjacent to high population areas should have different requirements than plants otherwise situated, because protective actions are more difficult and the consequences of failure or delay are higher. Many of our specific recommendations are designed to assist the State and its jurisdictions in meeting the higher requirements we believe need to be developed primarily at the Federal level.

Also, the plans appear to be based on the assumption that people will comply with official directions. We recommend the implementation of a continuous effort that assesses existing attitudes and expected behaviors, and planning (and public education) that is based on the results of these efforts.

The plans are designed to allocate responsibilities for emergency functions. The current format and structure does not easily allow integration of information such as evacuation time estimates, what segments of the public believe and intend, and risk and threat assessments. The plans should discuss and evaluate strategies for protecting people in a variety of scenarios.

## **Terrorism**

There are unique aspects of a terrorist caused incident that should be considered in planning and exercising. For example:

- The possibility of multiple obstructions of evacuation routes that are additive to those that would occur in a “normal” evacuation. Because they can be assumed to be deliberately designed to cause disruption, they may also be more difficult to address than normal evacuation problems.
- The possible targeting of responders.
- The possibility that spontaneous and/or shadow evacuation may be more of a problem than it would be in a non-terrorist event.
- The probable presence of a crime scene that may significantly change the communication and coordination aspects of a disaster response, as occurred in Oklahoma City.
- The probable diversion of those required to respond to the attack from response related law enforcement activities such as the safe evacuation of the affected populace.
- The probable involvement of agencies, such as the FBI, in both on site and off site activities in ways planners who now refuse to contemplate the unique implications of the terrorist threat have not yet considered.

It is important to note that a terrorist event need not result in a release for some of the above possible consequences to come into play. The unique aspects of a terrorist event should not be dismissed by simply asserting that they are covered in current plans and exercises.

## **Communications**

As is often the case in emergency response, interoperability and other communications shortcomings among the response agencies and jurisdictions hinders effective response, especially in areas of hilly terrain. The adjacent counties should have a priority in any communications project the State may undertake.

Also, municipalities within and beyond the ten-mile planning zone should have access to direct notification and information on current plant conditions and projections. A one-way flow of information supplementing current notification processes would help local officials get ahead of problems and retain public confidence.

## **Ten-Mile Emergency Planning Zone**

There is a likelihood of significant unnecessary evacuation within and beyond the ten-mile zone. Such an evacuation has serious public safety implications. Planning at all levels of government must reflect this likelihood.

## **Public Education**

Because evacuation is often assumed to be the only effective protective action, and because spontaneous evacuation is a problem for public safety, training relative to sheltering-in-place is necessary, well beyond the ten-mile zone. Also, effective public education must be designed

and initiated if aspects of the plan that are sensitive to public response are to be effective. Because many essential personnel indicate they will take care of their families, instead of focusing on their response activities, training on emergency family protection should be a component of this public education effort.

## **Exercises**

We observed the full-scale exercise of Indian Point held in September 24, 2002 but there was no comparable Millstone exercise for us to observe. The exercise program, of which the September 2002, exercise was a part, simply does not measure the performance outcome of the emergency response system. The results of the exercises are not as reflective of the status of preparedness as some consider them to be.

The exercise program uses a functional approach to exercise evaluation. The concept is to outline every function to be performed, analytically break down each function, and review the performance of the system using the functions and the points of review. The notion is that each atomized function can be reviewed separately and can be judged on its own merit.

The current approach to exercises is valuable in improving specific parts of plans. But an emergency response system should not be viewed functionally. It is a system where each part is connected to the whole. The system includes warning, dose assessment, protective action recommendations, instructions to the public and so forth. A break in the chain of activities may mean that the goal is not met.

The State should work with FEMA and others to develop a performance outcome-based exercise program distinctly different from the functional exercise approach. A functional approach examines each activity against regulations, guidance, or plans and looks for compliance. An outcome-based approach looks for the effects of the actions on the community.

## **Exercise Scenarios**

The implications of a release faster or larger than those now being addressed also need to be considered. The low end of the time range specified in NUREG 0654 (as low as one-half hour) is not being sufficiently exercised. In addition, the participating organizations need to focus on measuring how quickly the population is being affected versus the speed with which protective actions are being accomplished. Similarly, in the case of larger releases, we cannot verify that the larger end of the accident spectrum is being accommodated. The vigorous debate about whether a terrorist event actually increases the probability of such releases, about which we did not offer an opinion, should not detract from the need to address faster and larger releases.

Large shadow evacuation, especially for a terrorist event, should be included. These scenarios should be selected for their ability to test varying concepts for protecting people. A broader part of the community, including those publicly skeptical of the plans, needs to be involved in the development of the exercises as well as be able to participate and observe the exercises.

## **Response Management Technologies**

The Indian Point region is using old technologies in a number of areas. The hazard assessment process uses 25 to 30 year old map overlays for determining the area at risk. The hazard information specific to the dose assessment is communicated via phone or fax to the State and Counties. Plume information is currently not available through operable automation systems that can show the State and counties the precise areas that are at risk. Assessments do not integrate with population data and do not show the time that various zones would be at risk.

In providing warning to the people, there is an over-reliance on outdated sirens and the Emergency Alert System. Newer technologies, such as tone alert radios, have not been widely implemented.

When making protective action decisions, officials must consider what has happened, how it could affect people, the time windows available for actions, action alternatives, and the resources and constraints attendant on each action alternative. Currently, the protective action decision-making process is very simplistic, and there is virtually no technology support for these decisions.

We recommend that the Emergency Operations Centers (EOCs) and the technology supports for protective actions be significantly upgraded.

## **Public Review**

On January 10, 2003 James Lee Witt Associates completed the draft review. Because of the importance of the subject to the citizens and stakeholders in the area, and because we thought consideration of comments would improve the report, JLWA thought it appropriate that the public have an opportunity to provide comments on any aspect of it. The State concurred in this assessment and approach.

The comments received are recorded and discussed in a new appendix, Appendix K.

FEMA also commented on our draft report. Although it was sent two weeks after the close of the comment period, and not to us, we requested additional time from the State so that we could address their comments. We requested the additional time, and it was granted, because FEMA is the federal agency with purview over many of the issues we discuss, and we felt they and others should have benefit of our responses in their subsequent actions and decisions. Our consideration of the FEMA report can be found in a second new appendix, Appendix L.